PASS Chemistry Project

Moodle Adapted Multistep Quiz
(correct answers)

Information
Flag question

Question: Your Instructor blows up a balloon so that it is filled with 506 mL of Helium at 22.00 °C and 1.00 atm pressure. What volume (in mL) will the balloon have at 4.00 °C?

Strategy Map

1. What are we asked?
2. Think about how an ideal gas would be affected by the change in the question
3. Identify what does not change and identify changing variables
4. Recall how changing variables are related (proportionalities)
5. Obtain your relationship to calculate what you need
6. Convert units if necessary
7. Calculate your answer
8. Does your answer make chemical sense? Explain.

Work through the steps by completing the questions below!

Question 1
Correct
Marked out of 1.00
Flag question

What are we asked?

- a. When we add gas to the balloon how does pressure change?
- b. When temperature is increased how is volume of the balloon affected?
- c. What will the volume of a balloon be when temperature is decreased? ✓ Correct! Yay! Keep going to the next question!
- d. How does the amount of gas affect temperature?

Your answer is correct!

Question 2
Correct
Marked out of 1.00
Flag question

What happens to the behaviour of ideal gas molecules when they are coooled?

- a. Ideal gas molecules move faster when cooled
- b. Cooling does not affect the behaviour of ideal gas molecules
- c. Ideal gas molecules move slower when cooled ✓ Correct! Yay! Keep going to the next question!

Your answer is correct.

Question 3
Correct
Marked out of 1.00
Flag question

Drag and drop to complete the boxes below to identify the information you are given in the question and show what is not changing:

V_1 = 506 ✓ mL
T_1 = 22.0 ✓ °C
P_1 = P_2 ✓ = 1.00 ✓ atm
n_1 = n_2 ✓
V_2 = ? ✓ mL
T_2 = 4.00 ✓ °C
P_2 = P_1 ✓ = 1.00 ✓ atm
n_2 = n_1 ✓

4.00 | n_2 | 1.00 | 22.0 | P_1 | ? | n_1 | 506 | P_2 | 22.4

Correct! Yay! Keep going to the next question!

Question 4
Correct
Marked out of 1.00
Flag question

Drag and drop to complete the sentence below which states how the changing variables in the question are related:

For an ideal gas as T decreases ✓, volume decreases ✓ when amount ✓ and pressure ✓ stay the same.

decreases | amount | pressure | increases | temperature | volume

Correct! Yay! Keep going to the next question!

Question 5
Correct
Marked out of 1.00
Flag question

Starting from the general gas law simplify and rearrange to get the formula we need to solve for our unknown:

$R = \frac{Latm}{molK} = \frac{P_1V_1}{n_1T_1} = \frac{P_2V_2}{n_2T_2}$

- a. $V_2 = \frac{V_1T_2}{T_1}$ ✓ Correct! Yay! Keep going to the next question!
- b. $V_2 = \frac{T_1T_2}{V_1}$
- c. $V_2 = \frac{V_1}{T_1T_2}$
- d. $V_2 = \frac{V_1T_1}{T_2}$

Your answer is correct.

Question 6
Correct
Marked out of 1.00
Flag question

Before calculating the new volume you must convert temperature to Kelvin. Which of the following correctly states the temperatures in Kelvin?

- a. T_1 = 295 K, T_2 = 277 K
- b. T_1 = 295.2 K, T_2 = 277.2 K
- c. T_1 = 295.15 K, T_2 = 277.15 K ✓ Correct! Yay! Keep going to the next question!

Your answer is correct.

Question 7
Correct
Marked out of
Flag question

Your Instructor blows up a balloon so that it is filled with 506 mL of Helium at 22.00 °C and 1.00 atm pressure. What volume (in mL) will the balloon have at 4.00 °C?

Calculate and enter your answer for V_2 in mL:

English (en)

Answer: 475 ✓

Correct! Yay! Keep going to the next question!

Question 8
Correct
Marked out of 2.00
Flag question

Why does your answer makes chemical sense?

- Ideal gas molecules move slower ✓ when cooled
- The volume of an ideal gas is directly proportional ✓ to temperature
- A balloon has variable ✓ volume which is dependent on the force gas molecules exert on it
- Molecules that are moving slower will be applying less ✓ force to the walls of the balloon
- As the temperature of the balloon is cooled I expect its volume to decrease ✓

slower | faster | directly proportional | inversely proportional
decrease | increase | variable | constant
more | the same

Your answers are correct! Yay! You have completed this question and demonstrated your understanding. Well done!

Finish attempt ...

PASS Chemistry Project

Moodle Adapted Multistep Quiz
(incorrect answer feedback)

Information
Flag question

Question: Your Instructor blows up a balloon so that it is filled with 506 mL of Helium at 22.00 °C and 1.00 atm pressure. What volume (in mL) will the balloon have at 4.00 °C?

Strategy Map

1. What are we asked?
2. Think about how an ideal gas would be affected by the change in the question
3. Identify what does not change and identify changing variables
4. Recall how changing variables are related (proportionalities)
5. Obtain your relationship to calculate what you need
6. Convert units if necessary
7. Calculate your answer
8. Does your answer make chemical sense? Explain.

Work through the steps by completing the questions below!

Question 1
Tries remaining: 2
Marked out of 1.00
Flag question

What are we asked?

- a. What will the volume of a balloon be when temperature is decreased?
- b. When we add gas to the balloon how does pressure change? — Pause and think ? What is changing in the question?
- c. How does the amount of gas affect temperature?
- d. When temperature is increased how is volume of the balloon affected?

Your answer is incorrect.
Ask yourself: What is changing in the question?
Try again

Question 2
Incorrect
Marked out of 1.00
Flag question

What happens to the behaviour of ideal gas molecules when they are coooled?

- a. Ideal gas molecules move faster when cooled — Pause and think ? How does cooling affect ideal gas average kinetic energy?
- b. Ideal gas molecules move slower when cooled
- c. Cooling does not affect the behaviour of ideal gas molecules

Your answer is incorrect. Think about Charle's Law: $\frac{V_1}{T_1} = \frac{V_2}{T_2}$
Try another question like this one

Question 3
Partially correct
Marked out of 1.00
Flag question

Drag and drop to complete the boxes below to identify the information you are given in the question and show what is not changing:

V_1 = 506 ✓ mL
T_1 = 22.0 ✓ °C
P_1 = P_2 ✓ = 1.00 ✓ atm
n_1 = ? ✗
V_2 = 22.4 ✗ mL
T_2 = 4.00 ✓ °C
P_2 = P_1 ✓ = 1.00 ✓ atm
n_2 = ? ✗

P_1 | 4.00 | 22.0 | 506 | 1.00 | ? | n_2 | 22.4 | P_2 | n_1

Some of your answers are correct ? Pause and think and review your choices
You have correctly selected 7.
Try another question like this one

Question 4
Partially correct
Marked out of 1.00
Flag question

Drag and drop to complete the sentence below which states how the changing variables in the question are related:

For an ideal gas as T decreases ✓, volume increases ✗ when amount ✓ and pressure ✓ stay the same.

decreases | amount | pressure | increases | temperature | volume

Your answer is partially correct. Pause and think ? Since the balloon is being cooled molecules would move slower. How does this impact their ability to apply force to the balloon walls? What would this do to the balloon volume?
You have correctly selected 3.
Try another question like this one

Question 5
Incorrect
Marked out of 1.00
Flag question

Starting from the general gas law simplify and rearrange to get the formula we need to solve for our unknown:
$R = \frac{Latm}{molK} = \frac{P_1V_1}{n_1T_1} = \frac{P_2V_2}{n_2T_2}$

- a. $V_2 = \frac{T_1T_2}{V_1}$
- b. $V_2 = \frac{V_1}{T_1T_2}$
- c. $V_2 = \frac{V_1T_2}{T_1}$
- d. $V_2 = \frac{V_1T_1}{T_2}$ ✗ — Pause and think ? Go back to the general gas law, cancel out what does not change and rearrange to solve for V_2

Your answer is incorrect.
Try another question like this one

Question 6
Incorrect
Marked out of 1.00
Flag question

Before calculating the new volume you must convert temperature to Kelvin. Which of the following correctly states the temperatures in Kelvin?

- a. T_1 = 295.2 K, T_2 = 277.2 K
- b. T_1 = 295 K, T_2 = 277 K ✗ — Pause and think ? Did you pay attention to significant figures?
- c. T_1 = 295.15 K, T_2 = 277.15 K

Your answer is incorrect.
Try another question like this one

Question 7
Incorrect
Marked out of 2.00
Flag question

Your Instructor blows up a balloon so that it is filled with 506 mL of Helium at 22.00 °C and 1.00 atm pressure. What volume (in mL) will the balloon have at 4.00 °C?

Calculate and enter your answer for V_2 in mL:

Answer: 92 ✗

Pause and think ? Did you use your converted temperatures in Kelvin?

English (en)

Question 8
Partially correct
Marked out of 2.00
Flag question

Why does your answer makes chemical sense?

- Ideal gas molecules move the same ✗ when cooled
- The volume of an ideal gas is directly proportional ✓ to temperature
- A balloon has variable ✓ volume which is dependent on the force gas molecules exert on it
- Molecules that are moving slower will be applying the same ✗ force to the walls of the balloon
- As the temperature of the balloon is cooled I expect its volume to increase ✗

slower | faster | directly proportional | inversely proportional
decrease | increase | variable | constant
less | more | the same

Your answer is partially correct. Pause and think ? What was the impact of cooling on the motion of the ideal gas molecules?
You have correctly selected 2.
Try another question like this one

Finish attempt ...